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FAMILY LYCEUM.

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THE ANCIENTS.

CICERO.

[Concluded from the last Lyceum.]

AFTER the battle of Pharsalia, in which Pompey was defeated, Cicero returned into Italy, and was received into great favor by Cæsar, who was now declared dictator the second time, and Marc Antony his master of horse. It appears from his letters, that Cicero was not a little discomposed at the thought of an interview with a conqueror, against whom he had been in arms; for though he might expect a kind reception, yet he hardly thought his life, he says, worth begging; since what was given by a master might always be taken away at pleasure: but at their meeting, he had no occasion to say or do any thing below his dignity; for Cæsar no sooner saw him than he alighted, ran to embrace him, and walked with him alone, conversing very familiarly for several furlongs. A domestic occurrence of this period, which was in his sixty-first year, impressed a stain upon his private character, which no apologist has been able to efface. This was the divorce of his wife Terentia, immediately followed by a marriage with his rich and beautiful ward, Publilia, then in the flower of her youth. Though Cicero pretended several causes of complaint against Terentia, who, indeed, seems to have been a lady of spirit and management, yet the latter action too clearly explains the former. As he was involved in debt, the possession of Publilia's fortune rather than person, was probably his chief object in forming so unequal an alliance. His relation to her as a guardian, aggravated the impropriety of his conduct. Soon after this he was oppressed by a new and most cruel affliction, the death of his beloved daughter, Tullia, who died in child-bed soon after her divorce from her third husband, Dolabella. She was about thirty-two years old at the time of her death; and by the few hints which are left of her character, appears to have been an excellent and admirable woman. She was most affectionately attentive to her father; and, to the usual graces of her sex, having added knowledge and polite letters, was qualified to be the companion and delight of his age; and was justly esteemed, not only as one of the best, but the most learned of the Roman ladies. His affliction for her death was so great, that, to shun all company as much as he could, he removed to Atticus's house, where he lived chiefly in his library, turning over every book he could meet with on the subject of moderating grief. But finding his residence here too public, he retired to Asturia, one of his seats near Antium, a little island on the Latin shores, covered with woods and groves, cut into shady walks; a scene of all others the fittest to indulge melancholy, and where he could give a free course to his grief. 'Here,' says he to Atticus, 'I live without the speech of man; every morning early I hide myself in the thickest of the wood, and never come out till the evening. Next to yourself, nothing is so dear to me as this solitude, and my whole conversation is with my books.' In this retreat, he drew up one of the gravest of those philosophical pieces which are still extant in his works. Upon the death of Cæsar, Octavius his heir coming into Italy, was presented to Cicero by Hirtius and Pausa, with the strongest professions on the part of the young man, that he would be governed entirely by his direction. Indeed Cicero thought it necessary to encourage Octavius, to keep him at a distance from Antony, but could not yet be persuaded to enter heartily into his affairs. He suspected his youth, and want of experience; and though he had not strength enough to deal with Antony, and, above all, that he had no good disposition towards the conspirators, he thought it impossible he should ever be a friend to them, and was persuaded rather, that if ever he got the upper hand, his uncle's acts would be more violently enforced, and his death more cruelly revenged, than by Antony himself. And when Cicero did not consent at last to unite himself to Octavius's interest, it was with no other view but to arm with a power sufficient to oppress the republic. In the hurry of all these politics, he was still prosecuting his studies with his usual application; and, besides some philosophical pieces, now finished his book *De Officiis*, on the duties of man, for the use of his son: a work admired by all succeeding ages as the most perfect system of Heathen morality, and the noblest effort and specimen of what reason could do in guiding man through life with innocence and happiness. However, he paid a constant attention to public affairs, and did every thing that human prudence could do for the recovery of the republic; for all the vigor of its last efforts was entirely owing to his counsels.—This appears from those memorable Philippics which from time to time he published against Antony, but all was in vain; for though Antony's army was entirely defeated at the siege of Modena, yet the death of the consuls Pausa and Hirtius in that action gave the fatal blow to all Cicero's schemes, and was the immediate cause of the ruin of the republic. Octavius having brought the senate to his mind, marched towards Gaul, to meet Antony and Lepidus, who had already passed the Alps, and brought their armies into Italy, in order to have a personal interview with him; which had been privately concerted for settling the terms of a triple league, and dividing the power and provinces of Italy among themselves. The place appointed for this interview, was a small island, about two miles from Bononia, formed by the Rhine. Here they met, and spent three days in adjusting the plan of their accommodation, the last part of which was the proscription of their enemies. This occasioned warm contests among them, till each consented to sacrifice some of his best friends to the resentment of his colleagues.

Cicero was at his Tusculan villa, when he first received the news of the proscription of himself. It was the design of the triumvirate to keep it a secret till the moment of the execution, but some of Cicero's friends found means to give him early notice; upon which he set forward to the sea-side, where finding a vessel ready, he embarked; but the winds being adverse, after he had sailed about two leagues along the coast, he was obliged to land, and spend a night on shore. Importuned by his servants, he went on board a second time, but was soon after obliged to land at a country-seat of his, a mile from the shore, weary of his life, and declaring, he was resolved to die in that country which he had so often saved. Here he slept soundly, till his servants once more forced him a little towards the ship, having heard that he was pursued by Antony's assassins. They were scarce departed, when the assassins arrived at his house; and, perceiving him to be fled, pursued him immediately towards the sea, and overtook him in a wood near a shore.—Their leader was one Popilius Lenas, a villain, whose life Cicero had formerly defended and saved. As soon as the soldiers appeared, the servants prepared to defend their master's life at the hazard of their own; but Cicero commanded them to set him down, and make no resistance. They soon cut off his head and his hands, which they carried to their cruel employer, Antony, who received them with joy, rewarding the murderer with a large sum of money, and ordering the head to be fixed upon the rostra between the two hands; a sad spectacle to the city, and which drew tears from every eye, to see those mangled members which used to be exerted so gloriously from that place in defence of the lives, the fortunes, and the liberties of the Roman people, so lamentably exposed to the scorn of sycophants and traitors. The death of the rest, says an historian of that age, caused only a private and particular sorrow, but Cicero's an universal one. It was a triumph over the republic itself, and seemed to confirm and establish the perpetual slavery of Rome. Mr. Swinburne, however, is of opinion, that 'posterity has been too much seduced by the name of Cicero, and that better citizens were sacrificed to the jealousy of the triumvirs, without exciting so much indignation. If we take an impartial survey of Cicero's conduct and principles, avowed in his own epistolary correspondence, and trace him through all the labyrinths of his contradictory letters, we shall find more to blame than to admire; and discover, that the desire of advancing his fortunes, and making himself a name, were, from his outset in life, the only object he had in view. The good of his country, and the dictates of stern steady virtue, were not, as in Brutus and Cato, the constant springs of his actions. The misfortunes that befel him after his consulship, developed his character, and showed him in his true colors; from that time to his death, pusillanimity, irresolution, and unworthy repining, tainted his judgment, and perplexed every step he wished to take. He flattered Pompey, and cringed to Cæsar, while, in his private letters, he abused them both alternately. He acknowledges, in a letter to his friend, the time-serving Atticus, that, although he was at present determined to support the cause of Rome, and liberty, and to bear misfortunes like a philosopher, there was one thing which would gain him over to the triumvirs, and that was their procuring for him the vacant augurship; so pitiful was the bribe to which he would have sacrificed his honor, his opinion, and the commonwealth. By his wavering, imprudent conduct, he contributed greatly towards its destruction, after reproaching the conspirators for leaving him out of the secret, and loading them with the most flattering compliments on their delivering Rome from Cæsar's tyranny, he calls Casca an assassin, to pay his court to the boy Octavius, by whom he was completely duped. His praises of triumph are in the highest strain of panegyric. Marc Antony well knew, that the virulent abuse which Cicero was continually pouring out against him, was not an effusion of patriotic zeal or virtuous indignation, but merely the ebullitions of personal hatred.—He therefore caused Cicero to be killed, as an angry man that has been stung, stamps on a venomous animal that comes within reach of his foot. The cloak he threw over the body of Brutus, and the speech he pronounced at the sight of that hero when dead, differ widely from the treatment he gave the remains of Cicero; and show, that he made a distinction between a Roman, who opposed him from political motive, and one whose enmity arose from pique.' Cicero's death happened on the seventh of December, in the sixty-fourth year of his age, about ten days from the settlement of the first triumvirate; and with him expired the short empire of eloquence among the Romans. As an orator, he is thus characterized by Dr. Blair. 'In all his orations, his art is conspicuous. He begins commonly with a regular exordium, and with much address prepossesses the hearers, and studies to gain their affections. His method is clear, and his arguments are arranged with exact propriety. In a superior clearness of method, he has an advantage over Demosthenes. Every thing appears in its proper place. He never tries to move till he has attempted to convince; and in moving, particularly the softer passions, he is highly successful. No one ever knew the force of words better than Cicero. He rolls them along with the greatest beauty and magnificence; and in the structure of his sentences is eminently curious and exact. He is always full and flowing, never abrupt. He amplifies every thing; yet, though his manner is generally diffuse, it is often happily varied and accommodated to the subject. When an important public object roused his mind, and demanded indignation and force, he departs considerably from that loose and declamatory manner to which he at other times is addicted, and becomes very forcible and vehement. This great orator, however, is not without his defects. In most of his orations there is too much art, even carried to a degree of ostentation. He seems often desirous of obtaining admiration rather than of operating conviction. He is sometimes, therefore, showy rather than solid, and diffuse where he ought to have been urgent.—His sentences are always round and sonorous. They cannot be accused of monotony, since they possesss variety of cadence; but from too great a fondness for magnificence, he is, on some occasions, deficient in strength.—Though the services which he had performed to his country were very considerable, yet he is too much his own panegyrist. Ancient manners, which imposed fewer restraints on the side of decorum, may in some degree excuse, but cannot entirely justify, his vanity.'

The best editions of Cicero's works are that of Minutianus, 1498, Milan, 4 vols., folio; Paul Manutius, 1541, Venice, 10 vols., 8vo.; R. Stephens, Paris, 8 vols., 8vo., 1543; Elzevir, Leyden, 1642, 10 vols., 8vo.; Gronovius, 11 vols., 12mo., and 4 vols., 4to.; Verburgius, Amst., 1724, 2 vols., fo io; Ernest, Leipsic, 8 vols., 8vo., 1774; Olivet, Paris, 1740, 9 vols., 4to—Oxford, 10 vols., 4to.; Foulis, Glasgow, 1749, 20 vols., 12mo.; Lallemande, Paris, 1768, 12 vols., 12mo.—[*Univ. Biog.*

THE TRIUMPH OF SCIENCE AND ART.

WHETHER the caricatures which represent a steam engine as flying through the air, shall ever become anything more than a caricature, may be doubted; but such have been the achievements of science and art within the last three quarters of a century that it is really difficult to fix any limits to their future conquests. To justify us in pronouncing any thing impossible in machines, it ought to be in opposition to some law of nature, and not merely requiring an immense extent or difficult application of power. And so marvellous have been the inventions and discoveries in every branch of science and in all the arts, since the beginning of the last reign, that, if they had been predicted in the year 1760, most men would have thought the prophecy deserved to rank with the Arabian story of the erection of Aladdin's palace in a single night.

When the pack-horse with his bell was the only means of conveying merchandise through the land, and when the carrier conducted his string of horses along tracts always made to pass over the summit of the very highest hills, the vision of a modern mail-coach glancing through our valleys on roads nearly as smooth and level as a bowling-green, and conveying goods and passengers at the rate of 11 or 12 miles an hour, would have been regarded as the work of some supernatural beings, not clogged with the incumbrance of mortal clay. A man who should then have imagined that a distance of four hundred miles could have been performed in forty hours without difficulty or danger, would have been thought worthy of a place among the philosophers of Laputa.

A spinner at his wheel twisting and twirling the live-long day, to make some paltry hanks of yarn, would have gazed at the interior of a modern spinning-mill,—where thousands of spindles are whirled with incredible velocity, moved by no power visible to the spectator,—with a superstitious conviction that the whole was the work of unblessed powers. To tell him that the force which moved the mighty apparatus of the factory was earthly, yet that it was neither the force of men nor horses,—neither the strength of a torrent nor the piping winds of heaven, but nothing more or less than the steam of boiling water, would only have excited his indignation at the boldness of the imposture which it was attempted to palm upon him.

To show to one of those disorderly persons who return from the taverns after the hour of curfew, and who of old were wont to grope through the Egyptian darkness of our streets to their own houses, the splendidly illuminated streets of London or Liverpool, he would be blinded with light, and would fancy himself in the hall of Pandemonium, lit up 'by subtle magic,' with blazing cressets of naptha and asphaltos. If he could understand that these brilliant stars of light proceeded from an invisible vapor which circulated for miles under the streets, he would be only the more perfectly convinced that he had gone prematurely into the lower world.

Since the invention of printing, the power of man to disseminate knowledge has been increased, almost beyond calculation. Even within the last thirty years, a prodigious augmentation has taken place in this power. Before the improvement of Earl Stanhope, from 3 to 400 sheets might be printed per hour at the press; the steam-press which now works the Times newspapers, prints 4000 sheets per hour, or more than a sheet per second. It may be easily proved, that to write by hand the number of newspapers circulated by the Times daily, would require a million and a half scribes, yet they are printed with ease by two dozen men. Such is the effect of a skilful division of labor, that a debate of eight or ten hours' duration in the House of Commons may be fully and ably reported, printed, and published, so as to be read in London within three or four hours after its termination, and sixty miles distance from the metropolis before the speakers of the previous night have risen from their beds.

In navigation, as in printing, invention slumbered for centuries, and then suddenly awoke in the wondrous steam-vessel.—Steam navigation is probably yet in its infancy, yet it has already effected an astonishing extension of intercourse between all parts of the British Isles, the widely sepa-

rated towns and territories of the United States, and several of the countries of Europe. It was not uncommon a dozen years ago to wait in this port for days, and even weeks, before a vessel could sail to Ireland, and often have vessels been detained in the Channel days and even weeks, by calms or adverse winds. By the steam-packets we pass daily and with certainty in a single night, from Liverpool to Dublin; and they operate as bridges connecting the sister island with England. Calms do not retard their flight over the waves; adverse tides and winds, though they may somewhat impede, cannot arrest their progress. Instinct with power, 'they walk the waters like a thing of life.' By their aid the voyage to India will probably be made ere many years have elapsed; scarcely a more formidable thing than a journey from London to Scotland was a century ago.

Such are a few of the more striking inventions and improvements of modern times. Yet invention is not exhausted. These seem to be but the commencement of an endless series; and the late experiments of locomotive carriages on our rail-way, gives us quite a new idea of what science and art may yet do to quicken the transport of travellers and goods through the land.—Though the idea of moving a carriage by a mechanical power within it, is not absolutely new, yet it has never been successfully reduced to practice till our day; animate power, applied either externally or internally, has always been used for the purpose of locomotion. To place a steam-engine on wheels, and to make it move both itself and an additional weight, was a bold conception; the first essays were clumsy and unpromising, and even up to the present time a machine has never been seen in operation, which was calculated for the rapid conveyance either of passengers or of commodities.

The performance of the Rocket & Novelty give a sudden spur to our drowsy imaginations, and make our ideas fly as fast as the machine themselves. These engines with all their apparatus skim over the earth at more than double the speed of the lightest and fastest mail, drawn by the swiftest blood horses and driven by the most disperate coachmen over the smoothest roads in England. Upwards of thirty miles per hour! Let us see—at this rate we reach Manchester in an hour, Birmingham in three hours, London, Edinburg, or Glasgow, in six hours, and you may glide along with this bird-like speed with as little discomfort as if you were setting in your arm chair reading a volume of Diamond Poets, without being disturbed by a single jolt; I believe it would not be difficult to write. If the length of the journey made it worth while, I should expect to see rail-road coaches fitted up with libraries & escritoires; but it will soon be nearly useless to take up a book for such a short journey as one or two hundred miles.

But if the speed of thirty miles an hour has already been attained, what good reason is there that we should not in process of time accomplish sixty miles per hour? Nay, why should we stop there? I am not bold enough to anticipate the time when coaches will supersede the telegraph, but I may reasonably expect to see them leaving the carrier pigeon behind.

On a well constructed railway like that between Liverpool and Manchester, there is less danger in moving at the rate of thirty miles per hour, than there is travelling at the rate of ten miles per hour on a turn pike road. On the railway there is not a single turn and scarcely a single inequality; in these respects the ingineer has boldly and wisely aimed at perfection, there is thereby incurred what may be regarded an extravagant expense. The chief sources of danger in travelling rapidly on turn pike roads are first hills, second, turnings on the road; fourth, unruly horses; fifth, meeting other horses. Not one of these dangers on the railway, and thearfore it is difficult to limit the speed at which we may travel with safety.—*Liverpool Times.*

Wonderful Machinery.

The following account of a most extraordinary machine invented and constructed by Mr. Babbage of London, is given by the scientific Dr. Brewster, in his 'Natural Magic.' We could scarcely have credited it on any less competent authority.

'Of all the machines which have been constructed in modern times, the calculating machine is doubtless, the most extraordinary. Pieces of mechanism for performing particular aritmetical operations have been long ago constructed; but these bear no comparison, either in ingenuity or magnitude, to the grand design conceived, and nearly executed, by Mr. Babbage. Great as the power of mechanism is known to be, yet, we venture to say that many of the most intelligent of our readers will scarcely admit it to be possible that astronomical and navigation tables can be accurately computed by machinery, that the machine can, itself correct the errors which it may commit; and that the results of its calculations when absolutely free from error, can be printed off without the aid of human hands, or the operation of human intelligence. All this however, Mr. Babbage's machine can do, and as I have had the advantage of seeing it calculate, and studying its consruction with Mr Babbage himself, I am able to make the above statement on personal observation. The calculating machine, now constructing under the superintendence of the inventor, has been executed at the expense of the British Government, and is of course their property. It consists essentially of two parts, a calculating part and a printing part, both of which are necessary to the fulfilment of Mr. Babbage's views; for the whole advantages would be lost if the computation made by the machine were copied by human hands, and transferred to types by the common process. The greater part of the calculating machinery is already constructed, and exhibits workmanship of such extraordinary skill and beauty, that nothing approaching to it has been witnessed. In order to execute it, particularly those parts of the apparatus which are dissimilar to any used in ordinary mechanical construction, tools and machinery of great expense and complexity, have been invented and constructed, and in many instances contrivances of singular ingenuity have been resorted to: which cannot fail to prove extensively useful in various branches of the mechanical arts. The drawings of this machinery, which form a large part of the work, and on which all the contrivance has been bestowed, and all the alterations made, cover upwards of 400 square feet of surface, and are executed with extraordinary care and precision.

In so complete a piece of mechanism, in which interrupted motions are propagated, simultaneously, along a great variety of trains of mechanism, it might have been supposed that obstructions would arise, or even incompatibilities occur, from the impracticability of foreseeing all the possible combinations of the parts; but this doubt has been entirely removed by the constant employment of a system of mechanical notation, invented by Mr. Babbage, which places distinctly in view, at every instant, the progress of motion through all parts of this or any machine, and by writing down in tables the time required for all the movements; this method renders it easy to avoid all risks of two opposite actions arriving at the same instant in any part of the engine. In the printing part of the machine less progress has been made in the actual execution than in the calculating part. The cause of this is the greater difficulty of its contrivance, not for transferring the computations from the calculating part of the copper or other plate destined to receive it, but for giving to the plate itself that number and variety of movements which the form adopted in printed tables may call for in practice. The practical object of the calculating engine is, to compute and print a great variety and extent of astronomical and navigation tables, which could not be done without enormous intellectual and manual labor, and could not be calculated with the requisite accuracy.—Mathematicians, astronomers and navigators do not require to be informed of the real value of such tables: but it may be proper to state, for the information of others, that 17 large folio volumes of logarithmic tables alone, were calculated at an enormous expense, by the French Government; and the British Government regarded these tables to be of such national value that they proposed to the French Board of Longitude to print an abridgement of them at the joint expense of the two nations, and offered to advance £5000 for that purpose. Besides logarithmic tables, Mr. Babbage's machine will calculate tables of powers and products of numbers, and all astronomical tables for determining the position of the sun, moon, and planets; and the same mechanical principles have enabled him to intregate innumerable equations of finite difference; that is, when the equation of difference is given, he can, by setting an engine, produce at the end of the given time, any distant term which may be required, or any succession of terms commencing at a distant point. Besides the cheapness and celerity with which this machine will perform its work the absolute accuracy of the printed results deserves especial notice.—By peculiar contivances, any small error produced by accidental dust, or by any slight inaccuracy in one of the wheels, is corrected as soon as it is transmitted to the next; and this is done in such a manner as effectually to prevent accumulation of small errors for producing an erroneous figure in the result.—[*Am. paper.*

REPORT

Of a Committee, appointed to examine the Carstairian System of Writing, as taught by Mr. Thomas D. Smith, in the Teachers' Seminary, Andover, Mass.

The acquisition of a finished and expeditious system of writing, is a *desideratum* of eminent importance, for an easy discharge of the ordinary duties of life. This sentiment is one of almost universal acknowledgment; and in accordance with it, Chirography is made to occupy a *nominal* place at least, in the department of elementary instruction. But in this particular, as in numberless others, the admission of the importance of a subject is one thing—the practical influence of it, quite another. It is a fact too obvious to every one at all acquainted with our seminaries of learning, that the art of writing has not received that attention which its importance demands.—As a subject of education, it has been generally regarded as of secondary character; and of course the methods pursued by the teacher and the scholar, have almost entirely failed to accomplish the end for which they were intended. The style of writing thus acquired, has been invariably characterized by a slow, stiff, and formal movement—the natural result of the fingers only being brought into requisition. A system, however, has been recently introduced into our country, which is admirably adapted to obviate these evils, and which, we doubt not, will ultimately supersede all others. We speak of the *Carstairian System*—the only one, with which we have ever been acquainted, that seems to have proceeded upon just philosophical principles.

The following is a brief account of its invention. In the year 1800, Mr. Joseph Carstair, of London, was employed as a copying-clerk in the counting-room of a merchant; but finding himself unable to write with the rapidity which his business demanded, he left it for three months, in order to improve his hand-writing. During this time he first discovered something of the system, which he afterwards perfected. Having improved his own writing, he commenced teaching, and was soon known as an eminent teacher of the art. He became convinced, that in order to make *business writers*, a freer movement must be acquired than could be obtained by the use of the fingers *alone*. Hence he adopted the following movements.

1. Movement of the *whole* arm.
2. Movement of the *fore* arm.
3. Movement of the *fingers*.
4. These movements combined.

The movement of the arm he considered as the great producer of the combined motion—and is chiefly beneficial in forming Capitals. In teaching the movement of the *fore arm*, which is a contraction and extension of the muscles, the arm, within two or three inches of the elbow, is made to rest on the edge of the table—the wrist elevated nearly an inch—and the thumb, first, and second fingers confined, so that the use of them is prevented—while the third and fourth fingers are drawn under the hand, in order that they may slide on the nails.—By keeping the wrist thus elevated, and making the resting-point near the elbow, a sort of fulcrum, the writer is enabled to keep the hand always in an upright position, which gives a wonderful uniformity to all the letters—prevents the hand and fingers from being cramped, and helps the pupil to write with *ease and great rapidity.*

The fingers are principally used in making the letters ls, hs, ys, gs, &c. The combined movement may be thus explained.—In writing the word Baltimore, the *whole* arm is used in making the B.; the *fore arm* in making the small letters, a, i, m, &c.; the *fingers* in making the l and t. These movements are taught by a variety of exercises, and are practised upon more or less, separately, as the teacher may deem expedient.

Mr. B. F. Foster, of Albany, first introduced the Carstairian System into this country, and is now teaching it very successfully in the Albany Academy and Female Seminary. Mr. Smith has been some time under Mr. F's. instruction, and has taught it with very great success in the Teachers' Seminary in this place.

We consider this as the most pr[illegible] and common sense system now in use—most cheerfully recommend it to the attention of all who wish to acquire the art of writing with neatness, facility, and despatch.

S. R. Hall.
Osgood Johnson.
Frederick A. Barton.
M. Newman.

Andover, December, 1832.

Simplicity.

If there is any beauty, or grandeur, or power in nature, it is the simplicity of nature. If their is any sublimity, or power, or excellence in the gospel, it is the simplicity of the gospel. If there is any thing that darkens science, or bewilders and perplexes its patient followers, it is the contrivances of men. If there is any thing that is doubtful or discouraging in the precepts or the spirit of the gospel, it is made so by the devices of men.

While the student and the lover of science takes it directly from the hand of nature, and looks at its simple elements, and its various and beautiful combinations, his way is clear, his steps strong, and his progress rapid. But when he looks at words or books, instead of things, at technicalities instead of principles, at the conflicting theories of men instead of the harmonious operations of nature, he loses his way, his steps falter, and he is landed in a maze.

While the humble follower of the messenger of peace and love adheres to the simple principles of the gospel, his duty is plain, his conscious integrity consoling and animating, and his hand, his mind, his heart firmly united and vigorously employed, in answering their separate and mutual design in the exercise of good will, and the dispensing of good deeds to man. But when, instead of the simple principles of the gospel, which the little child can understand and feel, the searcher after heavenly wisdom, looks to the dogmas and the cunningly devised fables of men for instruction, his light becomes darkness, his love hatred, and his good deeds an ungodly persecution or revenge.

If these views are not correct, why is it, that the little child views with intense delight the objects and the operations of nature around him? Why is it that he sees, comprehends and feels the elementary principles and the distinguishing features of the three great kingdoms of nature. Why is it that by taking advantage of the principles of science, and the properties of substances, he is so soon able to fit means to ends. Why is it that older gray-headed pupils in science, are perplexed with so many doubtful disputations, alike unsatisfactory and useless?

Why is it that the little child can be made to see and to feel the guilt of injustice and unkindness so much better than the learned Doctors of the law? Why, that angry disputes, and unchristian and unholy controversies, under the semblance of religion is principally confined to those who have lived longest and studied most into their own dogmas and subterfuges.

The simplicity of science is alike striking and alike beautiful and dignified, whether it relates to the physical, the intellectual or the moral kingdom of our Creator. And it matters not in which of these kingdoms the humble and child-like disciple of nature looks for instruction and truth. While he is humble and child-like in his search after it, it is sure to come. It is also sure to enlighten, animate and ennoble its pursuer. He is sure to understand nature better, himself better, his duty and his happiness better. He is sure more fully to answer the purposes of his existence, and to make nearer approaches in character, in mind and in spirit, to Him who gave him existence, and who is the sum of perfection and of happiness in the universe.

Lancaster Lyceum.

One measure never fails to render Lyceums both useful and interesting, and yet very few appreciate it, or undertake to pursue it. The measure referred to is bringing the first classes of schools to take a part in the exercises. Such is the course pursued by the Lancaster Lyceum, this season, and the success is complete. Not only children and teachers, but all classes and ages show their interest, by crowding the Town Hall to overflowing, at the Lyceum Meetings.—At the last meeting, twelve teachers, with more than two hundred of their pupils, were present, who continued to interest and be interested for two hours.

After the reading and other exercises for children were closed, a short familiar lecture on the prominent features and motions of the earth, was given by one of the adult members, which the juvenile members showed they understood and remembered, by the prompt answers they gave to a variety of questions which were asked.

New Hampshire Lyceum.

A State Lyceum was organized on Wednesday of last week, at Concord, for New Hampshire, with arrangements for Lyceums in all the counties and towns in the state.

INSECTS.

BUTTERFLY.

This curious insect is distinguished by its antennas growing thicker towards the tip, and generally ending in a knob; wings, when sitting erect, the edges meeting together over the abdomen; flies in the day-time. Very nearly twelve hundred species scattered over the globe; of which nearly seventy are natives of England.

The insects feed on the nectar of flowers and the moisture exuding from trees; the larves are active, and furnished with tentacles and sixteen feet; they are sometimes spinous and sometimes naked, and feed voraciously on the leaves of various plants; the pupe is naked, quiscent, and attached to trees or other substances, by filaments either from the tip or the middle.

There is no tribe of insects that has been more accurately examined, or whose history has been so fully detailed. Reaumur and Fabricius are the naturalists to whom we are chiefly indebted for our knowledge of its extensive numbers, and very curious powers.

Some of the species frequently cast their skin, besides undergoing those more considerable transformations which introduce them into a new sphere of action. Before the fresh tunic is developed, the outer skin is seen to wither and lose the vivacity of its colors, owing to the new coat which already covers the animal beneath, and intercepts the juices which formerly circulated through it; after some efforts this dried covering is rent towards the back part of the head, where the fresh skin appears; and through this aperture the worm makes his escape, leaving his spoils behind.

After undergoing several changes of this kind, the insect prepares to undergo another and still more considerable, which is to introduce it into the state of chrysalis, deprived of almost all motion, and incapable of taking food. The change is effected nearly in the same manner as the foregoing; but in some it is very long in being accomplished. Several species of the butterfly-worm construct in a very ingenious manner a coque, or cocoon, or nut of silk, into which they enter before their transformation, and in which they continue for nine months, without food, before their metamorphosis be accomplished. During this long period they are apparently inanimate, and take no nutriment.

Various substances enter into the composition of the habitations constructed by these animals before their metamorphosis; some are of silk; in some, silk is combined with other matters; several kinds construct no habitations, but are protected by a crustaceous shell, formed by a glutinous substance, exuding from their bodies; some are suspended vertically, while others hang horizontally by a thread which surrounds the middle of the body.

The external form of the chrysalises varies according to the species of butterfly that inhabits them; in all, however, there are apertures opposite to the thorax, by which respiration is carried on during the whole period of their inactive state. After the appointed time, when the animal has acquired sufficient vigor, the shell is broken, which at once constituted the grave of the caterpillar and the cradle of the butterfly: the down already grown upon the insect has completely separated it on all sides from the shell, which by the action of the head is broken opposite to that part, and affords free egress to the prisoner so long confined.

The wings of the butterfly, on its first appearance, are close folded; but by the help of a liquor constantly circulating through them they are soon expanded, and sufficiently hardened by the action of the air, to endure the efforts of flying. It is then that the insect enters upon a more enlarged sphere of action, with increased powers: he ranges from flower to flower, darting his rostrum into their nectaries for the delicious stores they contain. Then too in the full possession of every faculty granted to his race, he prepares to multiply and perpetuate it.

This last and most considerable metamorphosis is attended with a greater change in the economy of the animal than any of the preceding; for not only the skin, but the teeth, jaws, and even the cranium are left behind. The large artery which passes along the body may be considered as a succession of different hearts employed in circulating the blood, which is at that important æra observed to flow in a different direction from what it did before, like the fœtus of a quadruped after birth: formerly it circulated from the extremity to the head; it now pursues a course directly opposite.

The quantity of food taken by these animals in their last state is comparatively small to what they antecedently devoured. For a short time after their appearance on the wing, their excrements are voided in a greater quantity, and are red like blood; this is, perhaps, the remains of that food which they contained before their late change. The appearance of this substance on the surface of the earth has at different times been regarded as portentous of some heavy calamity, being supposed to be blood that had dropt from the clouds.

CHEMISTRY.

Chalk is easily pulverized. When in powder, it is readily mixed with flour. If sulphuric acid or strong vinegar be poured upon chalk, it produces an effervescence as it is termed. By this process the chalk is divided and mixed with another substance. But the first process of dividing or pulverizing, is mechanical. The second process, which separates the lime in the chalk from the carbonic acid, and combines it with the sulphuric acid, is chemical.

By a file or grindstone, copper may be reduced to fine dust, so that it may be diffused through a large quantity of dust of some other kind. If nitric acid (aqua fortis) be poured upon copper, it divides it so minutely, that a piece not larger than a pea can be diffused through a hogshead of water, so as to give it a blue color. The filing or grinding copper is a mechanical process; dissolving it in nitric acid is a chemical process.

When the tanner lays down his hides in bark till the two substances combine so as to form leather, he performs a chemical process. When the saddler or shoemaker unites the leather, cloth, thread, &c., he performs a mechanical process.

When by the aid of potash or soda, the soap-boiler combines oil and water with the alkali, he performs a chemical operation.—When he cuts his soap into prisms of a convenient size for handling, he performs a mechanical operation.

When water falls upon the main wheel of a manufactory, and gives it motion, and by it puts in motion thousands of other wheels, spindles, shuttles, spools, &c., it performs a mechanical operation; when water gives up its oxigen to produce iron rust or copperas, and sets its hydrogen free to raise a balloon with one or two persons a thousand feet in the air, it performs a chemical operation.

When the atmosphere strikes the sails of a ship, and moves it across the Atlantic, it performs a mechanical operation; when it combines with the blood, and sustains the whole animal kingdom, it performs a chemical operation.

So we see, that there is chemical science and mechanical science, and one entirely distinct from the other; though artists frequently resort to both for performing their operations. Nearly all the domestic arts combine chemical and mechanical science. Agriculture is a chemical scienee and a chemical art. In almost every process the farmer performs, he is dependant upon the laws of chemical science for his success.—The mechanic who makes his plow and waggon, confines his operations principally to mechanical science.

Cookery is a chemical science, and a chemical art. The process of making bread is almost wholly chemical. Roasting the beef or turkey, preparing the tea and coffee, and heating in every form, is a chemical process. Every good housekeeper is a good practical chemist, though some may not be free to acknowledge it.

Since all farmers and all housekeepers, to say nothing of the tanner, the brewer, the tallow-chandler, the dyer, the painter, and a host of other artists, are wholly dependant upon chemical science, for the success of their operations, it is evident that all who live by eating, are also interested in having a knowledge of it generally diffused. Indeed, there is perhaps no science which it is more important to have familiar to every man, woman, and child in the world, than chemistry. It is hence our intention to continue for a number of weeks a series of essays upon this science, with its application to the various arts and pursuits of life. We shall state and explain the fundamental and important principles of the science, give cuts of apparatus for performing experiments to illustrate those principles, and describe the mode of using the apparatus, state the application of those principles to various arts and common pursuits, and use the whole for showing the wisdom, the power, and the goodness of our Creator.

☞ We have strong hopes, and even confidence, that those who commence with the series, and examine each essay in the course, and make it a topic of conversation, will find themselves in possession of many useful facts, and even of a systematic knowledge of this useful and practical science.

METEOROLOGY.

In the first number of the Family Lyceum, a suggestion was made on what was termed *comparative meteorology*, or tables of the weather, &c., so arranged and compared, that it can be seen how the temperature, rains, winds, &c., in each month, compare in different parts of the earth. For example, to publish in some journal the mean temperature, for the month of January, 1833, in Quebec, Boston, New York, Baltimore, Charleston, New Orleans, St. Louis, Cincinnati, Paris, London, Canton, &c.

From some inquiry and experiment, we are satisfied that the undertaking is wholly feasible, and so far as our own country is concerned, it can be entered upon almost immediately. It is even already begun.

We are glad to be able to give in this number, some tables furnished by John Farmer, of Concord, N. H., who has a great and valuable collection of facts relating to the weather, especially in different places in New Hampshire. Mr. F. has also a great mass of general statistics, which we hope to avail ourselves of, either directly or indirectly.

In our last number we gave a table which we were favored with from Brown University, Providence. It gives us pleasure to acknowledge several favors of that kind from the Female Seminary of Savannah, Ga.—If seminaries generally through the country would keep meteorological tables, it would furnish all the data we should need to carry our plan into effect under the most favorable circumstances possible. In favor of such a measure, we are now glad to be informed, that all the incorporated Academies in the state of New York are furnished from the state funds with all the apparatus necessary for keeping such tables.

NEW HAMPSHIRE.

From the copy for a new edition of the 3d volume of Dr. Belknap's History of New Hampshire, to contain the Geography, Natural History, and Statistics of that state, we are furnished with Abstracts of the *annual temperature* of the weather, at several places, for a series of years. The account of the state of the thermometer at Epping, (kept with great accuracy by Hon William Plumer, late governor of the state,) embraces a period of twenty-two years, from 1809 to 1830, inclusive. From this account, the annual temperature is as follows, the observations being made from Fahrenheit's thermometer.

Years.	Deg.	Years.	Deg.	Years.	Deg.
1809.	47	1810.	45	1811.	46
1812.	42	1813.	46	1814.	45
1815.	43	1816.	43	1817.	43
1818.	44	1819.	46	1820.	44
1821.	44	1822.	46	1823.	43
1824.	44	1825.	46	1826.	46
1827.	45	1828.	47	1829.	44
		1830.	46		

The average annual quantity of rain which fell during this period was 32 1-2 inches. The greatest quantity in any one year was 44 inches in 1818, and the least quantity was 23 inches in 1823. It may be observed that Epping is in the county of Rockingham, in lat. 43° 3′.

The account of the weather at Amherst, in latitude 42° 51′, from 1806 to 1821, and at Concord, in latitude 43° 12′, from 1821 to 1832, and embracing a period of 26 2-3d's years, was kept by J. F. In all the years during that period, a thermometer was not used. The annual mean temperature does not materially differ from that at Epping, but at Amherst it is generally greater than at Epping or Concord. In 1811, the mean temperature at Epping was 46°; at Amherst it was 50°. The greatest degrees of cold at Concord, observed from the same thermometer, were, in 1821, 13, 12, and 15 degrees below zero, on the 19th, 24th, and 25th January; in 1822, 12, 24, 12 and 16 degrees below zero, on the 5th, 11th, 14th and 17th days of January; in 1823, 11, 12, 12 & 13 degrees below zero, on the 7th, 14th, 16th of January, and the 6th of February; in 1824, 16, 16 and 19 degrees below zero, on the 2d, 5th and 6th of February; in 1825, 9, 10 & 8 degrees below zero, on the 9th February, and the 13th and 23d December; in 1826, 11, 14 and 21 degrees below zero, on the 27th and 31st January, and the 1st February; in 1827, 9, 11 and 13 degrees below zero, on the 21st and 25th January, and the 23d December; in 1828, 7 and 4 degrees below zero, on the 25th and 30th January; in 1829, 10, 10, 20 and 13 degrees below zero, on the 3d, 4th and 31st January, and the 1st February; in 1830, 5, 15 and 18 below zero, on the 27th, 29th, and 81st January, in 1831, 7, 11 and 14 degrees below zero, on the 11th, 28th and 31st December; and in 1832, 8, 15, 18 and 20 degrees below zero, on the 8th, 27th and 28th January, and the 25th February. The greatest degree of heat during the 26 2-3d's years, at Amherst and Concord, was in July, 1825, the mercury rising to 99 4-4 degrees.

STATISTICS.

CRIME.

The following facts are worthy of the consideration of those who regard the use of ardent spirit as a blessing, or at worst but a small evil to society.

State Prison at Auburn—The number of convicts in prison at the 1st of Jan. 1832, was 646. The earnings of these convicts above every expenditure were $1,803 83.

'The chaplain of the Prison furnishes the following statement respecting the former character and habits of the convicts.

'Among those discharged from the prison during the last year, by pardon and expiration of sentence, there were,

Of superior education,	2
Of decent common education,	36
Of very poor education,	65
Of no education,	30
	133

Of this number, 95 have been addicted to habits of intemperance.

The male convicts remaining in prison, on the first of the present year, may be classed, with reference to their former habits of drinking, in the following manner:

Grossly intemperate,	209
Moderately intemperate (regular drinking, and occasional intoxication, or either,)	258
Temperate drinkers,	132
Total abstinents or nearly so,	19
	647

Of these, 346 were under the influence of ardent spirits at the time of the commission of their crime.'

The results of the sabath school in this prison, are of a pleasing character; among which are enumerated, humble and submissive demeanor—cheerful compliance with the rules of the prison—in many cases, pungent sense of the guilt of their crime, and gratitude to God and man for that restraint and discipline by which they have been brought to a knowledge of their sins.

CONVENTION OF TEACHERS.

The Framingham Lyceum invites a meeting of the teachers and other friends of schools of that town and vicinity, at 1 1-2 o'clock on Wednesday the 16th of this month, on the subject of *common* education; some of the modern improvements in education will be explained by Mr. Holbrook of Boston, and some others acquainted with the business of teaching.

A few elementary specimens in Geology will be presented to the teachers of each town which is represented at the meeting. It is supposed that the exercises will be interesting to teachers, parents, school committees, and to the oldest members of schools.

If some friend or friends of education in each town in the vicinity should aid their teachers and pupils in attending they would be likely to improve the character and extend the usefulness of their schools.

BOOKS LENT.

The editor of this paper will be glad of information respecting the, following books. Silliman's Chemistry, 2 volumes 8vo; Says Entimology, 3 voumes 8vo; one of six volumes of Goods Gallery of Nature and Art, 8 vo; Worcesters Scetches of the Earth, 2 vols. 12 mo; Comb on the Constitution of Man, 1 vol. 12 mo. Malte Brune's General Atlass, large Quarto.

MISCARRIAGES.

Though we regret the fact, we are glad to be informed of it, that any of our sheets fail of reaching their place of destination. Our brother of the Genius of Temperance, has had the goodness to inform us, that most of his fail; and a note from the Post Master explains the cause, which before, we could not imagine. If Mr. Goodell or any other correspondent or subscriber will mention the numbers which have failed, we will supply them if possible and will thank them for mentioning any failures in future.

☞ YOUNG MEN'S ASSOCIATION FOR THE PROMOTION OF LITERATURE & SCIENCE.—A meeting of this Association will be held at the New Court House, Court Square, on Monday Evening, Jan. 7, at 7 o'clock. Exercises—Original Composition by several members.

COUNTY LYCEUMS.

The friends of Education in Litchfield county, Ct., Union county, Ohio, and Adams county, Mississippi, have recently organized Lyceums, with branches in the different towns and neighborhoods. We hope another year will witness a County Lyceum in each of the thousand counties in the Union, and that that Lyceum will have under its patronage a Lyceum Seminary, or a SELF-EDUCATING and SELF-SUPPORTING SCHOOL.

BOOK OF NATURE.

QUADRUPEDS.

Of this order it may be remarked in general, that they derive their name from the number of their legs; and this naturally occasions in those that make use of them for the purpose of walking, the prone posture by which they are distinguished; but this posture, far from incommoding them, is, by the wise conformation of the other parts, rendered the most commodious possible for their habits and manner of living. Quadrupeds are, for the most part, furnished with tails, and these are highly useful in the absence of arms, for sweeping off vermin and troublesome animals. Having no hands to lift their food to their mouth, the necks of this order are in general proportioned to the length of their fore legs; their legs are made to bend in such a direction as with the greatest ease to facilitate their motion forwards; they have, for the most part, a covering of hair or wool; and, that the weight of the head might not become too heavy in the act of feeding, each of these animals is furnished with a strong tendinous insensible ligament, braced from the head to the middle of the back, which both enables them to support their burden with ease, and to recover their head at pleasure.

In the particular construction of the various species of Quadrupeds, with their several dispositions and appetites, there are several things very remarkable; but we will only mention a few of them in which the wisdom and goodness of the Creator, in adapting them so wonderfully to their different situations, habits, and manners of living, are very conspicuous.

Animals of the *graminiverous* kind, such as the Horse, the Ox, and the Sheep, are furnished with masticating organs, adapted to the soft herbage they eat; being of harmless dispositions, they are only armed with defensive weapons, and for mutual safety associate together in herds.

Those whose natures are fierce and savage, and whose cruel dispositions, like those of the Tiger and Hyena, cannot be satisfied but at the expense of blood, come forth solitary and alone; but they are armed with fearful claws and horrid tusks, and monstrous jaws, wonderfully fitted for the seizure and destruction of their victims.

The CAMEL, doomed to traverse the parched and burning deserts of Arabia, where continual drought and sterility reign, has not only a foot admirably fitted for this element, and endowed with a remarkable abstinence, but carries along with him a natural reservoir, which he fills with water at every well.

The LAMA of South America, (the only original beast of burden it produces,) is remarkably sure-footed, and climbs and descends with the greatest safety the craggy rocks it has to encounter, among the rugged steeps and narrow paths of the Andes, though encumbered with its load.

Goats range the craggy steep, and delight to crop the uncultivated heath from the mountain's brow; and behold how admirably their hollow hoofs are formed for taking hold of the rock, and with what surprising agility they bound from cliff to cliff!

Animals of the Weasel kind, that live chiefly in holes, and feed upon vermin, are not only furnished with furs to preserve them from the damp, but have long slender flexible bodies well adapted for their various windings. The Sea-horse of the Northern Ocean, whose element is sometimes in the water, and sometimes on the ice, is not only web-footed, to assist in swimming, but has two monstrous tusks, bending down from the upper jaw, which, together with his claws, enable him to scramble up the icy beach at pleasure. In short, the mole is moulded in the best possible manner for his subterraneous habitation—the Squirrel for his aerial flights—the Kangaroo for his tremendous leaps—and the Bat, which unites the Quadruped with the Volatile race, is shaped in the most convenient manner for his predatory excursions.

But if this remarkable accommodation of the parts and appetites of quadrupeds, to their habits and pursuits, is apt to excite our surprise, what must we think of those still more surprising and remarkable *instincts* by which many of them are distinguished. In their internal formation some of this order are so strikingly analogous to the human body, that it is said some skill in physiology is necessary to be able to notice the difference; and in the external appearance of the Ourang outang, or Wild-man of the Wood, there is certainly no little resemblance. So much, indeed, does the external appearance of this creature resemble the human, that 'the Negroes imagine them to be a foreign nation, come to inhabit their country, and that they do not speak for fear of being compelled to work.' They are also the only animals that imitate man in the use of weapons otherwise than what are natural, frequently attacking their enemies with sticks and stones. That they possess an eminent share of natural sagacity in the absence of reason is evident, from the manner in which they make sheds for shelter, and go to sleep in trees for security, as well as from their descending from the mountains, when they no longer find fruits, to the sea-shore in search of shell-fish. In the passage of one of these animals from Angola to England, it made many friends on board, and seemed to despise the monkeys of a lower species, by avoiding that part of the ship where they were confined. Buffon describes one of these animals which he saw, as sitting down at table, unfolding his napkin, wiping his lips, making use of a fork or spoon, pouring out its drink into a glass, touching glasses with the persons who drank with him, giving his hand to show the company to the door who came to see him, and walking about as gravely as if he formed one of the society. 'All these,' he observes, 'I have seen, without any other instigation than the signs or command of his master, and often of his own accord.' He also mentions, that his deportment was grave, his movements regular, and his disposition gentle, very different from other apes. Francis Pryard relates, that in the province of Sierra Leona there is a species so strongly limbed, and so industrious, that when properly trained and fed, they work like servants.

But to proceed; what wonderful prudence, foresight and industry, does the republic of Beavers display, as, in a state of social compact, with an overseer at their head, each exerts his powers and contributes his exertions to raising the mole, and forming with care the fortified settlement! What sagacity does the elephant discover, as he discharges the water from his mighty trunk, in order to cool himself in the midst of the burning plains of Caffraria!

Who knows not the affectionate tenderness of the Dog? the mischievous cunning of the Monkey? the inflexible perseverance of the Cat, in watching her prey? and the subtle artifices of the Hare, in eluding her pursuers?

The Lion, at whose tremendous roar creation flies, as if knowing the terror which his fearless form inspires, has recourse to cunning, and watches his prey in ambush, in the neighborhood of those springs and waters to which they must necessarily come to quench their thirst. The Bear, in autumn, betakes himself to his winter quarters, nor ventures abroad till spring has again renewed the face of the earth. The Chamois Goat when closely pursued in his mountainous retreat, will suddenly rebound on the huntsman, and precipitate him over the rock. The Hedge-hog in winter wraps himself up in his mossy seat. The Porcupine when almost overtaken in the pursuit, on a sudden rolls himself up, and presents to his antagonist, instead of a delicious morsel, a ball of prickles: and the Armadillo, actuated by the same unerring impulse, joins his extremities beneath his shelly covering, and rolls over the precipice unhurt, to the confusion of his enemy. But this is not all; Horses in a state of nature are not only said to keep a centinel on the outlook, but when attacked join heads together and fight with their heels. Oxen in a similar state join tails together, and fight with their horns. Swine get together in impenetrable herds to resist the attack, and what is observable in all, they place the *young* in the middle, and keep them safe in the day of battle!

These are some of the wonders of instinct;—and can we behold them without admiration?

THE USES OF QUADRUPEDS

Are so various, that we must content ourselves with only naming a few of them. Of what great utility for the purposes of agriculture, travelling, industry, and commerce, is that docile and tractable animal the Horse! In what a variety of ways do those of the Ox and Sheep kindly administer to our wants! and happily for the world, these creatures are most extensively diffused, from the polar circle to the equator.

Goats in many of the mountainous parts of Europe constitute the wealth of the inhabitants: they lie upon their skins, convert their milk into cheese and butter, and feed upon their flesh. The Reindeer, to the inhabitants of the icy regions, supply the place of the horse, the cow, the sheep, and the goat. The Camel is to the Arabian what the Reindeer is to the Laplander. The flesh of the Elk is palatable and nutritious, and of his skin the Indians make snow-shoes and canoes. The Elephant, in warm countries, is useful as a beast of burden, and draws as much as six horses.

What an unwearied pattern of unremitting exertion and fidelity is that invaluable animal the shepherd's Dog! What humane and excellent life-preservers, the Newfoundland species! and what sagacious guides and safe conductors are that useful breed trained in the Alpine solitudes, to carry provisions to the bewildered traveller, and lead his steps to the hospitable convent!

To what a number of depredators would our substance be exposed, were it not for that convenient and agile, but often ill-fated domestic animal, the Cat; which, in consequence of an ill-founded prejudice excited against her for those very habits and propensities which render her valuable, and were implanted in her nature for the best of purposes, often becomes the victim of unfeeling boys, and often, too often, alas! is made the sport of more unfeeling barbarians, who deserve not the name of men. The Ichneumon is to the Egyptians, in several respects, what the Cat is to us; but far from thinking of hanging her up in a barrel, and amusing themselves with her sufferings, that more grateful people have worshipped the Ichneumon as an emanation of the Deity! Cannot our more soberminded countrymen adopt a conduct betwixt the two extremes, and at least treat the *purring race* with kindness? Animals of the Weasel kind furnish us with a number of rich and valuable furs; the Civet, the Jenet, and the Musk, with a supply of perfumes; the tusks of the Elephant and the Sea-horse with ivory; the beautiful skin of the Tiger decorates the seats of justice of the mandarins of the east; the flesh of the White Bear is eaten by the Greenlander, that of the Leopard is much relished by the African; and the Lion, even the Lion, the living tomb of so many creatures, is frequently eaten by the Negroes at the last!

We have reason to be thankful that in our happy country we are abundantly supplied with food of a more harmless nature, and much easier to be obtained than those formidable monsters of the desert, and that when taking a solitary ramble through our peaceful fields, we have no occasion to adopt the following sentiments of the poet so feelingly expressed:

'What if the LION in his rage I meet?
Oft in the dust I view his printed feet;
By hunger rous'd, he scours the groaning plain,
Gaunt WOLVES and sullen TIGERS in his train;
Before them Death with shrieks directs their way,
Fills the wild yell, and leads them to their prey.'

ON VARIETIES OF ANIMALS.

'To all has nature given a bound precise
Of being and perfection; and promulg'd,
To every varying rank, her varying laws;
Urging from this, from that restraining firm.'

In the science of natural history, philosophers have found it expedient to arrange objects first under a few grand divisions, and then to divide, and afterwards subdivide these in the following manner. The most general divisions are called *Classes;* each class is again divided into several lesser parts, which are called *Orders;* each order contains a certain number of *Genera;* each genus consists of several *Species;* and each species contain certain *Varieties*, which is the smallest subdivision that they have taken notice of. It is the lowest link of their chain of classification which will form the subject of the present chapter.

It is unnecessary for us to enter deeper into this system of classification than merely to point out the distinguishing circumstance that they have laid hold on to mark the boundaries between what they call a *species* and a *variety;* and this will be the easiest done by choosing a familiar example for illustration. The horse and the ass are both of the same genus of quadrupeds; and they resemble each other so much, that they might well be mistaken for beings of the same species; but although it be found that is possible to make them procreate, yet it is also known that the mule, which is produced from this intermixture, is not capable of continuing its kind, which circumstance induces naturalists to rank them as a different species. When animals procreate together, and produce an offspring that is capable of continuing their kind, however different they may be in their appearance and other particulars, they are accounted as only *varieties* of the same species; nor is there any criterion that we know of, for distinguishing a *variety* of any particular kind of animal from a distinct species of the same genus, but that of producing a fertile or an infertile progeny. In this particular, we believe, all naturalists are agreed.

That there are many varieties of most species of animals is well known; and as many of these varieties, especially among domesticated animals, readily intercopulate with each other, and produce a mixed race, participating of the qualities of both parents, it necessarily must happen that in cases where they are suffered to mix together, the descendants of an animal of one of these varieties is very different from that of the parent race. This fact having been remarked, has given rise to an opinion, that there has been originally but one pair of animals of each species, and that all the *varieties* we now discover of the same species, have been produced by accidental circumstances only, such as a variation of climate, of food, or of some other extraneous peculiarity; and that, of course, one variety may be transmuted into another without any intermixture of blood, purely by a change of circumstances only. This doctrine being once admitted, the inferences which necessarily result from it, have proved highly detrimental to the practice of individuals in their attempts to improve the breed of domestic animals; as it tends, in as far as that doctrine is believed, to turn the attention of men from fixed and certain principles, which admit of no variation, to others that are vague and erroneous, which tend only to puzzle and confound the mind, and leave it in perpetual darkness and uncertainty.

The boldest asserter of the doctrine, that all the varieties of every species of animal are derived from one common stock, is the celebrated Buffon, who, instead of searching for proofs to support his hypothesis, contents himself with mere assertions, uttered with as much confidence as if the matter had been proved beyond a possibility of doubt; and he takes as the subject for his illustration the dog kind, though the varieties of this species are more distinctly marked than those of perhaps any other animal with which we are intimately acquainted. He says, that the shepherd's dog (a variety of the canine species, by the bye, which cannot be so distinctly recognized as many other kinds,) is the original stock from which the grayhound the spaniel, the pointer, the harrier, the bull-dog, the lap-dog, the mastiff, the terrier, and every other variety, are all directly produced; and he even goes so far as to specify the means that are necessary to be adopted for producing these changes. It is painful to dwell upon the accidental failings of a man of genius; for which reason we decline following him in his excursive career, and exposing the absurdities into which he has fallen in pursuing it. We have only to regret, that a man of such distinguished talents should have so far overlooked facts that were easily within his reach, as to have so positively dogmatised upon this subject in direct contradiction to them; for the multitude, who think not at all, follow the authority of one who is, on many accounts, so respectable, without the smallest degree of hesitation. In consequence of this great authority, the hypothesis above stated has been tacitly, at least, assented to, by the literary world in general, for some time past, though it will not require great exertions to bring such evidence, as we hope will prove satisfactory to every reader, to shew that the fact is directly the reverse of what this learned philosopher has stated it to be.

If it were true, that a change of climate affected an animal to such a degree as this hypothesis supposes, it would be impossible that any person existing should not have had opportunities of observing very striking instances of this kind. But, instead of this, the most direct proofs of the contrary must have fallen within the observation of every man in the kingdom, in respect to the very animal that he has selected for illustration. The dog is a favored domestic; he attaches himself to his master, and follows him wherever he goes. He is thus carried through all the climates of the globe, under the immediate control and inspection of man; and no instance hath ever been known in which an individual dog has ever thus experienced any material change in his external form, far less in his internal qualities. If a smooth-haired Spanish pointer, for instance, be carried to the torrid or the frozen zone, from Kamtschatka through the whole extent of Asia and Europe into America, he is the same smooth-haired dog every where; and his master recognises him for the same creature at the first glance; but if the pile of its hair and external appearance be not altered, far less is the animal changed in its other qualities; it still scents the game in the way peculiar to that kind of dog; it does not, like the greyhound, pursue it by the eye; it does not, like the hound, burst forth in sonorous howling when it feels the scent strong; this variety of the dog kind steals upon its prey with extreme caution and circumspection. These qualities it possessed at its birth, and these qualities it retains till its dying hour, in spite of any change of climate or kind of food it may be made to experience. The same thing may be said of every other kind of dog. The English bull-dog displayed the same unconquerable obstinacy on the area of ancient Rome, as he does at this day in the island which gave him birth; and the Newfoundland dog of the present day is equally gentle, equally attached to his master, and alike firm in his defence in every part of Europe as in America. In short, the universal experience of mankind incontrovertibly proves, that the same individual dog continues the same in regard to all its essential characteristics in every region of this globe, and under every different system of management. He may be rendered fatter or leaner, diseased or sound, and these variations of management will produce a temporary change in his appearance; but no evidence was ever known of a dog of one kind being converted into one of another sort. The terrier continues to ferret out the lesser animals with silent assiduity; the lap-dog to bark at every thing that moves; the pointer retains his quick sense of smelling; the grayhound searches for his prey by the eye in every region alike; so that there is no reason to doubt that every kind of dog, considered individually, retains the same faculties unchanged throughout the whole course of its life, to whatever changes of food or climate it may be subjected.

But if the individual itself remain unchanged under every possible variation, how are we to conceive that a change in this respect can affect the progeny? Can any one believe that if a grayhound bitch, while with young, were allowed to bring forth her litter in one place (in Britain suppose, the place of her nativity,) she would produce true grayhounds; but if she were carried to Norway, the litter would turn out to be mastiffs; in Turkey longhaired pointers; and in other countries hounds, terriers, and all the other varieties of dogs? At the bare mention of such a position the mind revolts from it, as from a self-evident absurdity; but if the litter were not brought forth in these states in different climates, the puppies must be changed instantaneously after they come into the world; for, as we have seen they are not changed by it at any other period of their life, it must be now that the change is affected (like tad-poles into frogs,) or never. But who has ever heard of such a metamorphosis? We all know that no such thing takes place. Yet this, and more, must have happened, were there the smallest foundation for this hypothesis. These changes must have happened not once only, but often; not casually, but invariably; of course it would have been utterly impossible to propagate a grayhound in one country, or a beagle in the other; in short, every country would have had its own particular variety of dogs, and none other. But this we know is contradicted by the clearest facts, and the universal experience of mankind; and it must appear to be not a little surprising to those who reflect upon it, that an hypothesis which is, under every point of view, so absurd, should ever have obtained currency for one moment among men who had their eyes open, and were not deprived of the power of reasoning.

QUESTIONS ON LYCEUM No. 20.

WHO was the greatest Roman orator, and when was he born?

Against whose party did he first take an active part?

Where did he go when he was driven from Rome, and whom did he find in his retirement?

What is asserted by Dr. Chalmers, as being the only preventive or antidote of poverty?

How does he suppose that Christian Education can prevent poverty?

In what manner will Education prevent poverty, by checking population, or by providing for the wants of population?

Who are most generally furnished with competence and wealth, married or single men?

Upon whom does the expense of intemperance fall heaviest, married or unmarried men? the rich or the poor?